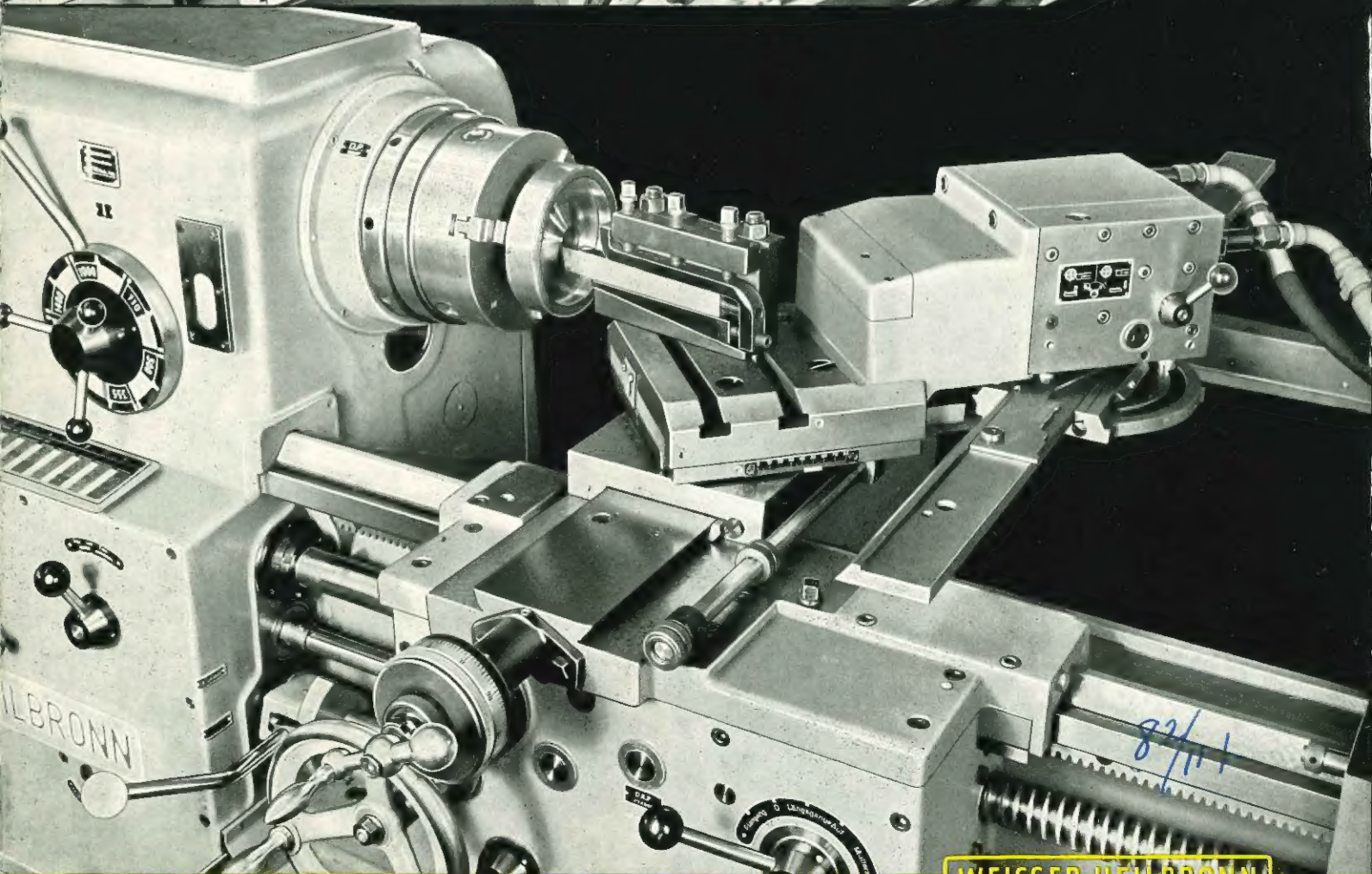


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Multicop

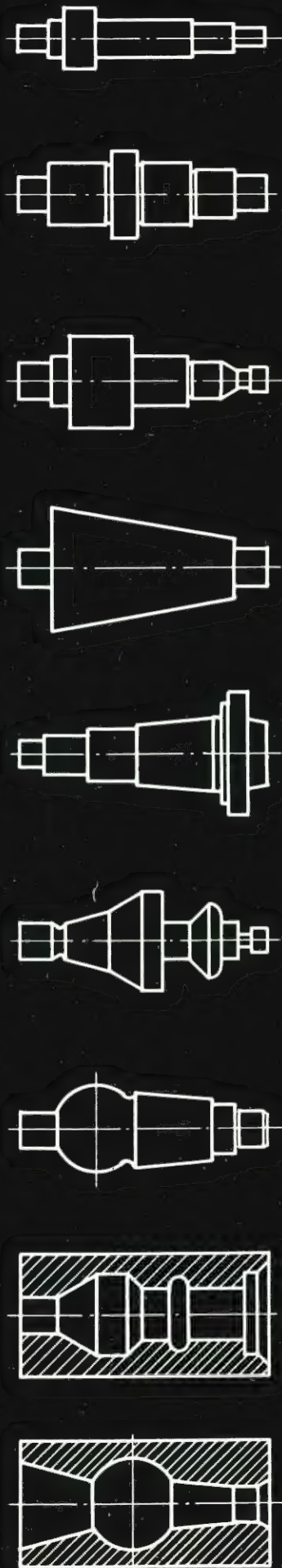
HYDRAULIC COPYING EQUIPMENT



WEISSER HEILBRONN

EUGEN WEISSER & CO. KG. HEILBRONN/NECKAR (GERMANY)

MACHINE TOOL WORKS · SALZ STRASSE 79 · B3, 128-130 · PHONE: 2943



The hydraulic copying attachment

Multicop

designed for longitudinal and transverse copying has been developed over a long period in our own workshops. The equipment has been tested by us under the most severe and exacting conditions. The MULTICOP device has proved so versatile that it can be relied upon to meet the widest requirements of every user.

For turning shafts with several shoulders, for profiled **internal** as well as **external** work and complicated facing operations, MULTICOP is unequalled. Users invariably praise the high degree of precision and astounding reduction in machining time they have achieved when using the attachment. An eight to tenfold increase is not at all unusual for a MULTICOP equipped lathe when compared with the average production obtained from a modern manually operated lathe.

Our products are subject to changes in design and appearance as a result of their continuous advancement. Text, illustrations and specification are, therefore, without guarantee.

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Fig. 1 Longitudinal copying. Fig. 2 Transverse copying.

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Fig. 3 Samples of work that can be done with MULTICOP.

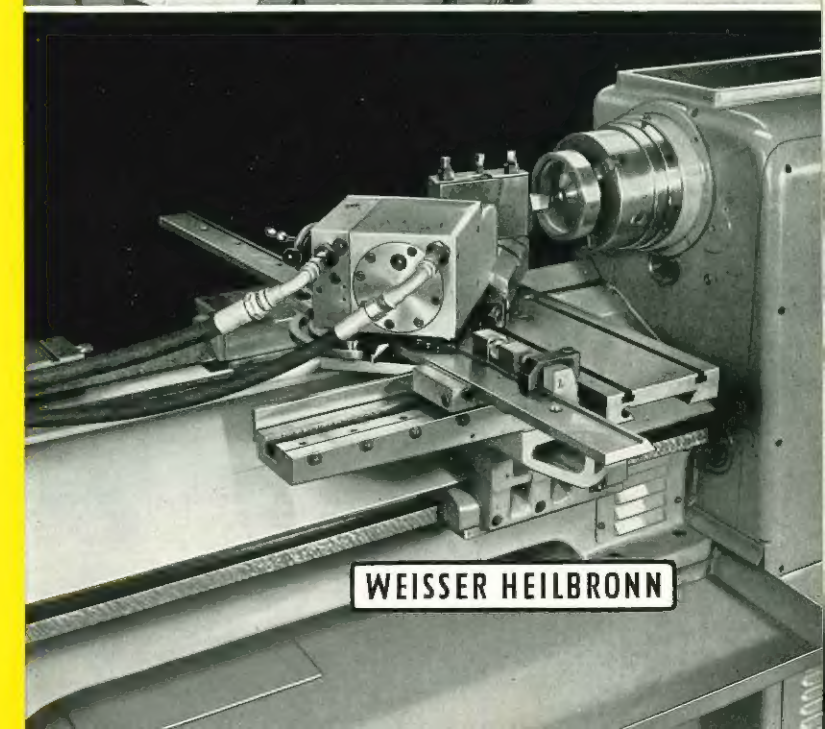
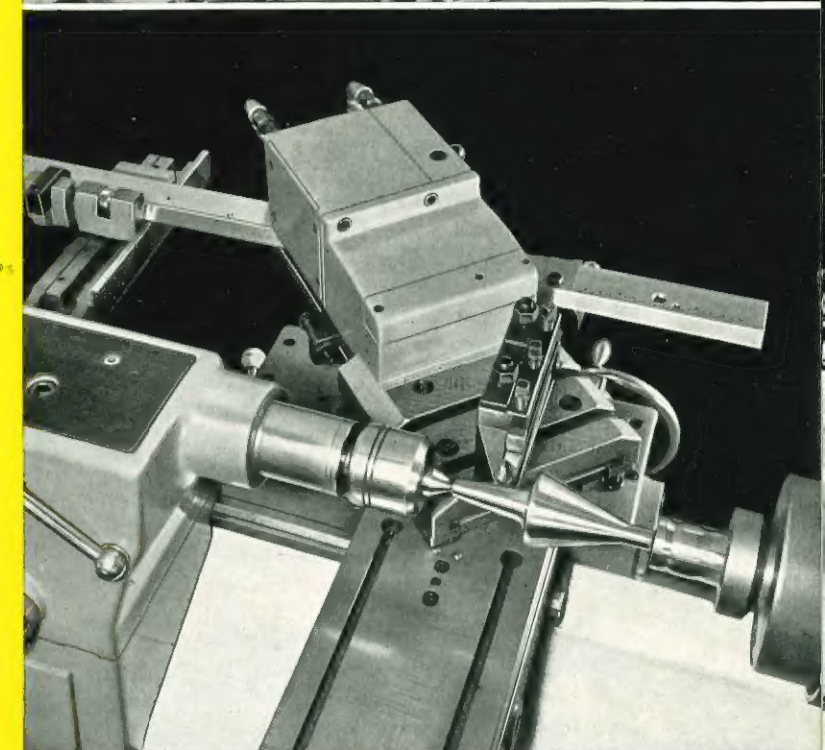
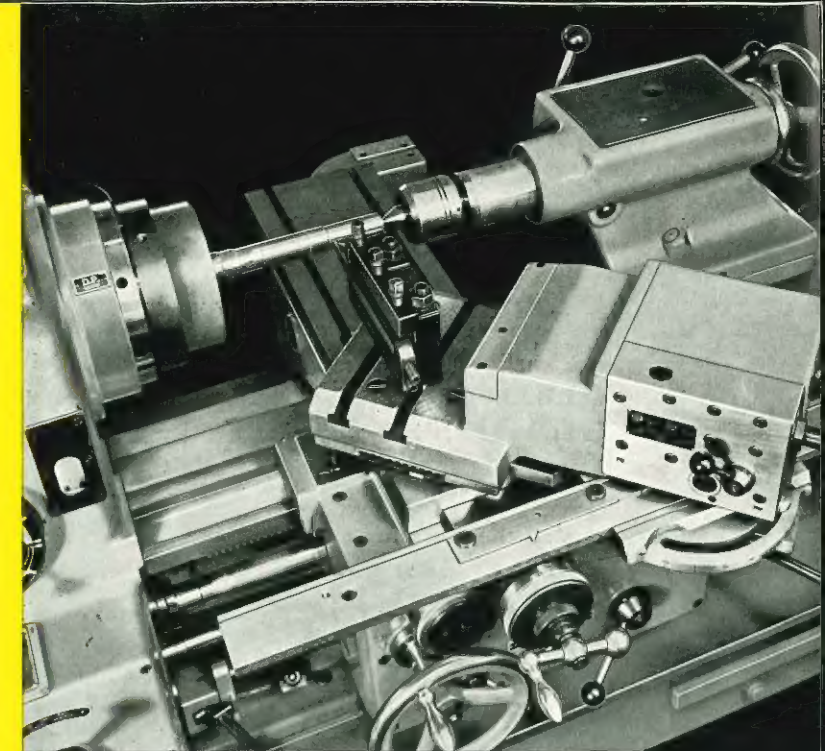
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Fig. 4 MULTICOP set f. longitudinal work (front view).
Fig. 5 Rear view of a longitudinal copying operation.
Fig. 6 Facing with MULTICOP (rear view).

Machine Tool Show, Philadelphia, Pa.
May 1st, 1958
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Multicop GUARANTEES

1. Smooth surfaces on the finished work through the continuous action, single cutting tool.
2. Maximum production, because repeated checking of measurements, can be dispensed with.
3. Permanent accuracy of size through automatic control.
4. Reduced allowances for finish-grinding, i. e. less time is needed for subsequent grinding of the turned piece.
5. High degree of machining accuracy, within limits of .001 to .002 inches, depending on type of work can be obtained.
6. Dispenses with costly profile-cutting tools as well as multiple-tool set-ups.
7. Conversion of standard centre lathe when attaching MULTICOP requires 10 to 15 minutes at the most. Breaking up of set-up in identical short time. When not needed for copying, lathe can be used for any standard turning job including thread cutting.
8. Quick set-up for different machining operations. Exchange of cutting tools can be accomplished in less than one minute.
9. Substantial reduction of errors - consequently less chance of work being scrapped.
10. Practically any combination of diameters, increasing and decreasing tapers, chamfer, radii, profiles, grooves, recesses, relieving, etc. are obtainable through a single uninterrupted cut.
11. All diameters are set by the conventional cross-slide, therefore no change in the routine of the operator.
12. Speed and capacity of the lathe can be utilized to the fullest extent.
13. MULTICOP copies by means of templet which latter is scanned by the stylus with a pressure of only 11 oz. Templets need not, therefore, be hardened. Longitudinal tolerances of work as well as differences in centering of work pieces are corrected in simple fashion through the adjustable templet carrier.
14. MULTICOP is mounted in front of lathe, leaving rear of lathe free for use with taper attachment.
15. Feed adjustment in the normal manner through gear box.



APPLICATION OF *Multicop*

To facilitate mounting of MULTICOP on lathes of every type we have supplied the attachment with mounting fixtures which are furnished without extra charge.

MULTICOP 260 G 2 is suited for our GOLIATH high-speed lathe and PANTHER production lathe which have a centre height of $8\frac{1}{4}$ " respectively.

MULTICOP 260 DLNE is adapted for mounting on our DLNE model with a centre height of 10" and on other makes having identical or higher centre heights.

MULTICOP 260 PZ is designed for our production lathe PZ 165 with a centre height of $6\frac{1}{2}$ ".

MULTICOP 260 G 1 fits on the GOLIATH high-speed lathe with a centre height of $7\frac{1}{2}$ ".

MULTICOP 260 FLNES can be mounted on our FLNES lathe which has a centre height of $7\frac{1}{4}$ " as well as on lathes of other manufacture having a centre height of at least $7\frac{1}{4}$ " or more.

All MULTICOP attachments are identical in their capacity, they merely vary in their mounting devices. When ordering a MULTICOP for use on lathes not built by WEISSER, we advise the prospective customer to request a special drawing from us which will be forwarded for the purpose of entering necessary lathe specifications thereon. The latter are required for the construction of the correct mounting fixture.

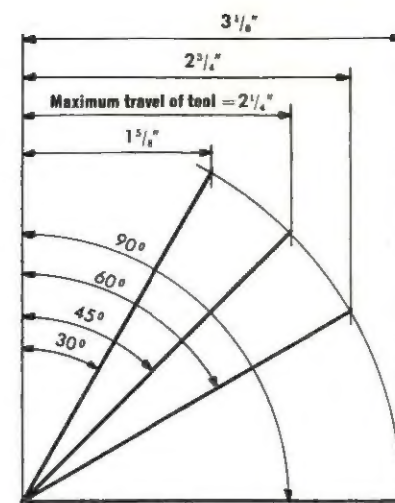


Fig. 7

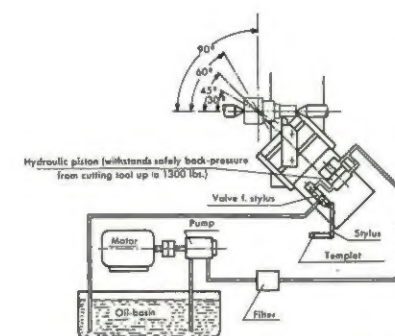


Fig. 8

Fig. 7 Maximum depth of cut with tool adjusted at angles indicated. Fig. 8 Diagram showing operating principle of MULTICOP.

THE ADVANTAGES OF COPYING FROM TEMPLET

Guided by the slide feed the stylus of the MULTICOP attachment scans the templet and transfers its contours on to the work piece. The advantages in using templets as compared to copying from a finished sample are considerable though generally not recognised.

Making a templet requires no more time than is needed for finishing a sample of work. A special templet arbor, supplied with the attachment, facilitates making the templet. The piece of sheet metal, required for this job, is fastened in the arbor by means of screws. The arbor is held between the lathe centres, and the templet then machined as any other work. Depending on the degree of accuracy required the finished templet can be ground subsequently on a cylindrical grinder for which operation it remains in the arbor.

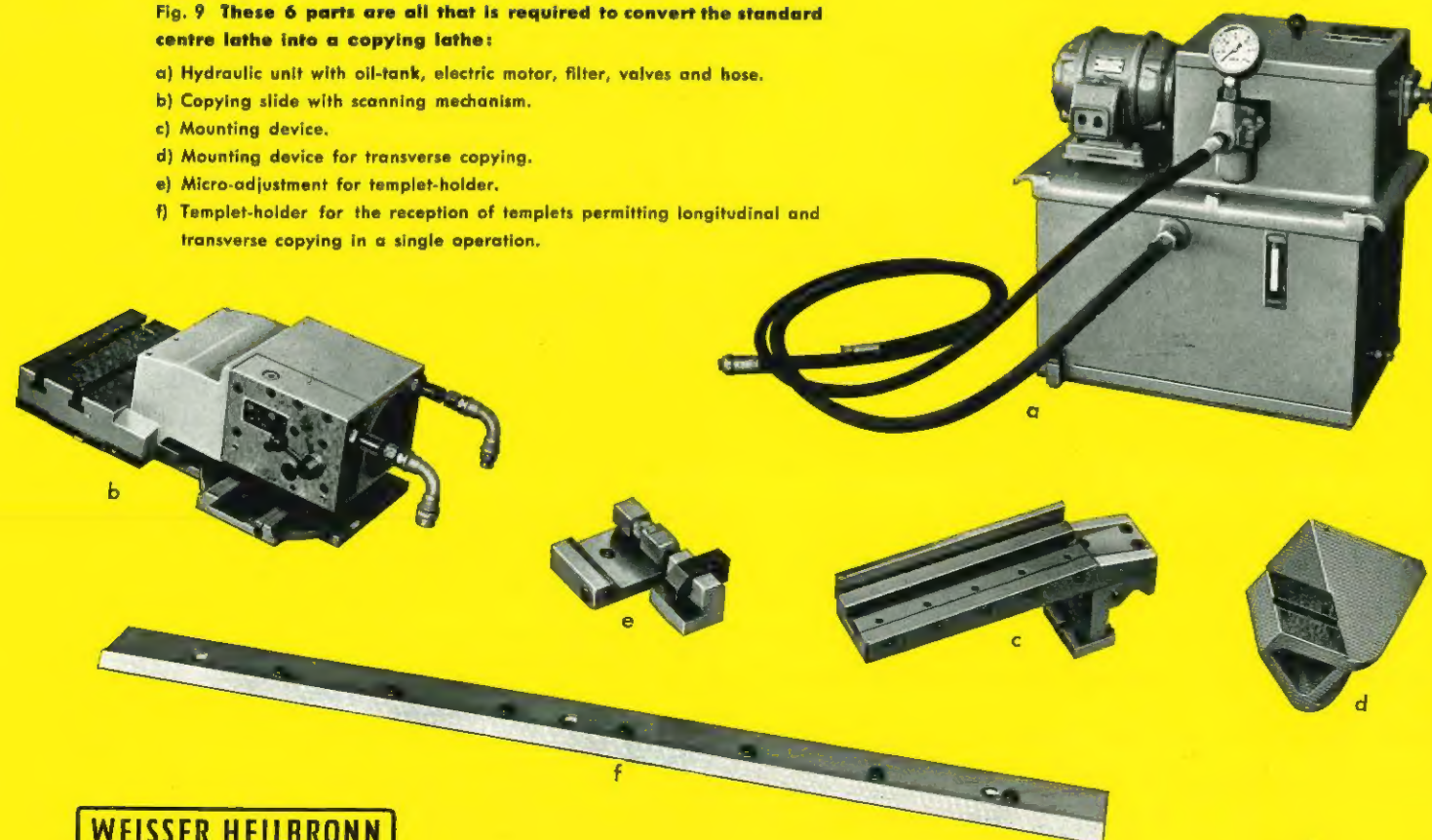
Should the work piece to be made have recesses, slots, etc. it may prove advantageous to use one templet for roughing and a second one for finishing the work. They are mounted, one above the other, on the templet carrier. The roughing templet shields grooves, etc. which are finished later with a finer cutting tool. For the finishing cut simply remove the roughing templet which will allow the stylus to scan now the finishing templet. Since turning from stock requires as a rule several cuts, a heavier cutting tool is used often for the initial roughing. If such a heavier cutting tool were to be used in the copying from a finished sample (instead of a roughing templet) recesses, etc. would be cut wider and the surface finish of the work prove poor in quality. Since it is impossible to properly shield the contours of a finished sample which would be necessary for a roughing cut, we advise strongly against use of sample pieces for scanning.

One more argument in favour of using templets is the simple but valuable one that they can be stored conveniently for re-use on repeat orders. They require little space and are on hand for the next job.

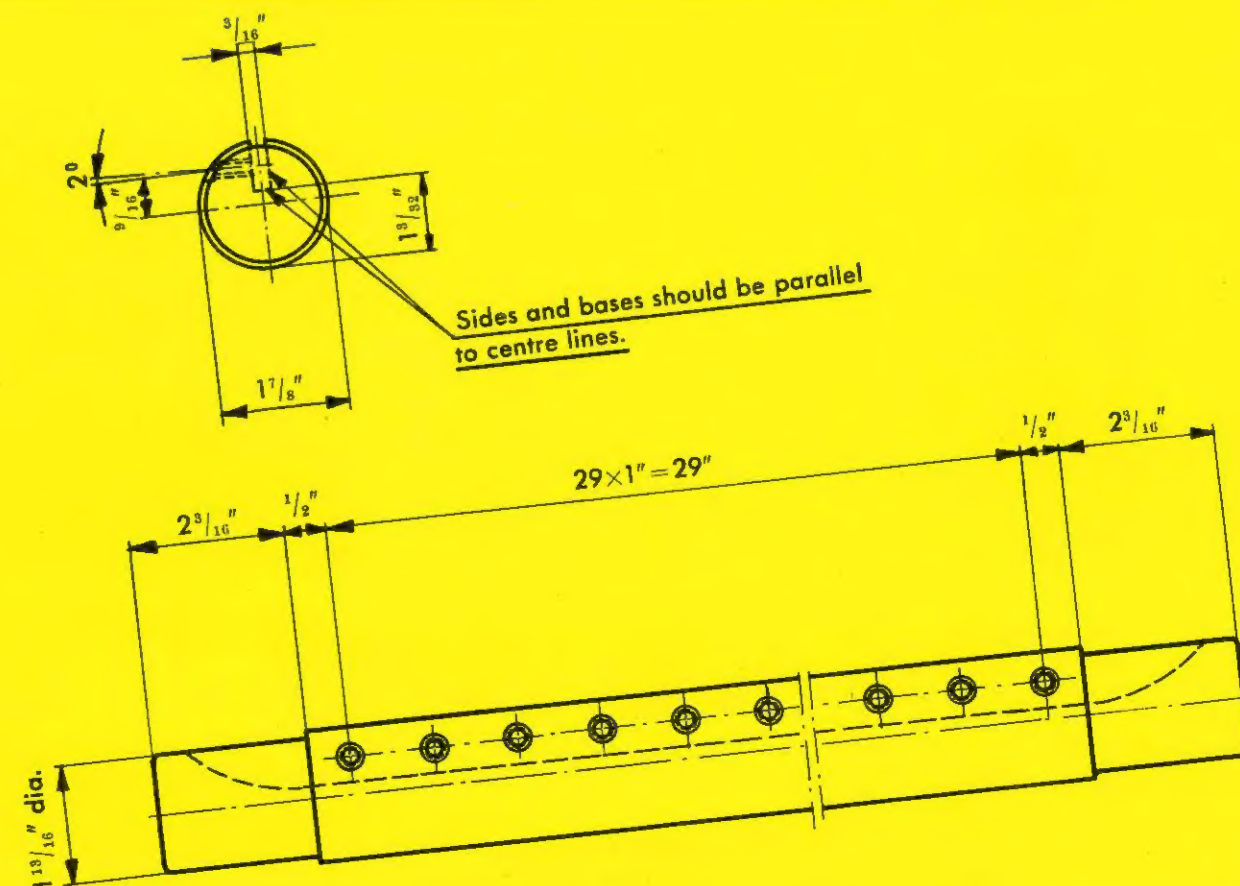
Fig. 10 Use of the templet-arbor simplifies turning of a templet.

Fig. 9 These 6 parts are all that is required to convert the standard centre lathe into a copying lathe:

- Hydraulic unit with oil-tank, electric motor, filter, valves and hose.
- Copying slide with scanning mechanism.
- Mounting device.
- Mounting device for transverse copying.
- Micro-adjustment for templet-holder.
- Templet-holder for the reception of templets permitting longitudinal and transverse copying in a single operation.



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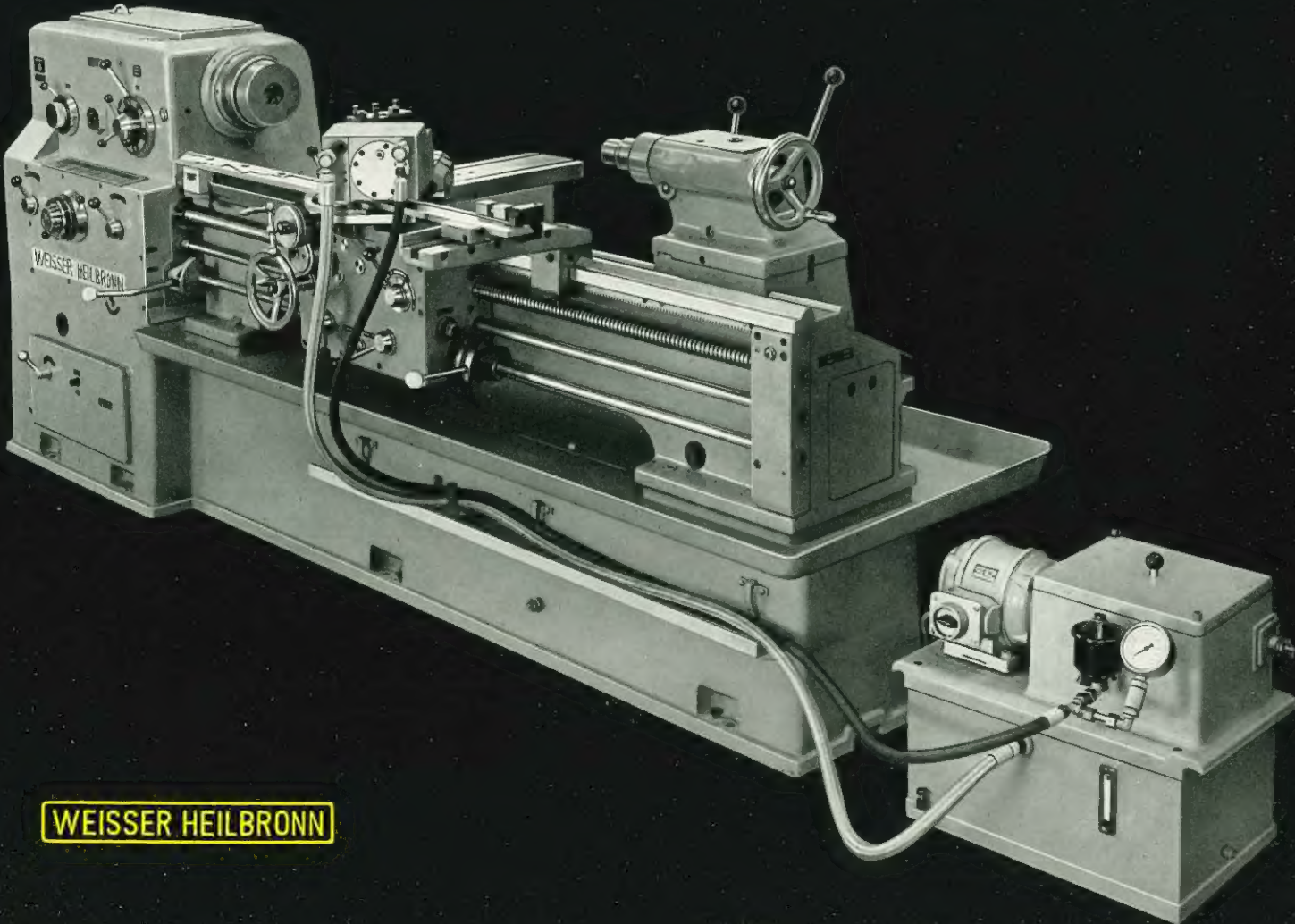
FRONTAL ARRANGEMENT

Most copying devices are mounted at rear side of lathe in contrast to MULTICOP which is attached in front. We believe the latter system has a decided advantage, because it affords maximum effectiveness with simplicity of operation. The MULTICOP principle of copying is generally acknowledged as being of perfect efficiency. The rear arrangement, followed by other makers, has the disadvantage that it forces the lathe operator to alter his accustomed operating technique. In contrast MULTICOP employs the standard in-feed of any centre lathe.

An additional advantage of the frontal arrangement is to be found in the favourable cutting pressure which it provides. Tool pressure against the carriage is the same as in any normal turning operation, i. e. the cross slide is pressed into the ways. A rear-mounted copying device can provide this direction of pressure only when rotation of head spindle is reversed.

Finally, simultaneous mounting of a taper attachment is not interfered with, when MULTICOP is used thanks to its location at front side of lathe.

Fig. 11 GOLIATH high-speed lathe equipped with hydraulic copying device MULTICOP for longitudinal and transverse copying.



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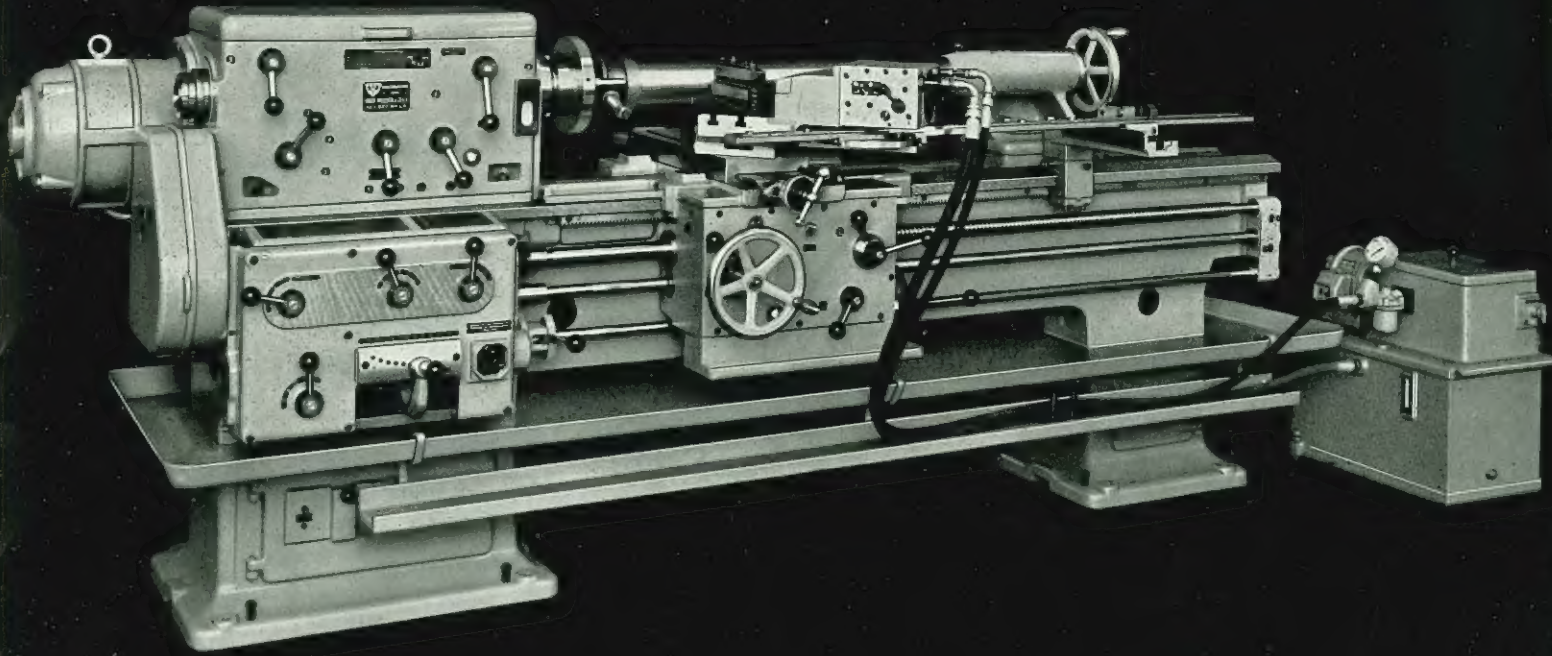


Fig. 12 High-speed lathe, model DLNE, centre height 10", with hydraulic copying device MULTICOP for longitudinal as well as transverse copying.

SPECIFICATIONS

Dimensions		inch.	mm	MULTICOP type	code
f. GOLIATH high-speed lathe and PANTHER Prod. Lathe.....		8 1/2"	210	260 G 2	multi
f. High-speed lathe DLNE and other makes w. min. centre height.....		10"	250	260 DLNE	mallo
f. High-speed prod. lathe PZ 165.....		6 1/2"	165	260 PZ	meipo
f. GOLIATH high-speed lathe.....		7 1/2"	190	260 G 1	milga
f. High-speed lathe FLNES and other makes w. min. centre height.....		7 1/4"	185	260 FLNES	malfa
Piston stroke vertical to centre line.....				3 1/8"	80 mm
Max. depth of cut w. tool adj. at 90°.....				3 1/8"	80 mm
Max. depth of cut w. tool adj. at 60°.....				2 3/4"	69 mm
Max. depth of cut w. tool adj. at 45°.....				2 1/4"	56 mm
Max. depth of cut w. tool adj. at 30°.....				1 5/8"	40 mm
Oil pressure in operation.....				280-284 lbs. p. sq. inch.	18-20 kg/cm²
Tracing pressure of stylus.....				11 oz.	300 Gramm
Weights			Shipping dimensions (boxed f. export)		
Approx. net weight.....	lbs. 595	270 kg	Length.....	2'8"	800 mm
Approx. gross wt. (boxed f. rail shipment)	lbs. 640	290 kg	Width.....	2'10"	850 mm
Approx. gross wt. (boxed f. seagoing exp.)	lbs. 685	310 kg	Height.....	2'8"	820 mm
			Cu. cont.....	20 cu. ft.	0,56 cbm

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WORK SAMPLES
AND THEIR RESPECTIVE
TEMPLATS



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